




## A new ichneumonid genus (Hymenoptera: Ichneumonidae: Ctenopelmatinae) from the south of Russian Far East

## Новый род наездников-ихневмонид (Hymenoptera: Ichneumonidae: Ctenopelmatinae) с юга Дальнего Востока России

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**Abstract.** A new genus and species, *Petiolon cephalotes* **gen. et sp. nov.**, are described in the tribe Pionini (Ichneumonidae: Ctenopelmatinae) from Primorsky Territory of Russia. The new genus differs from other genera of the tribe by its unusually long, narrow and almost straight first metasomal segment without glymmae, very broad head which is 1.7 times as wide as mesoscutum (measured between tegulae), and unusually thick ovipositor with very thin lower valves in their apical 0.25. The latter character is typical for the Pionini.

**Резюме.** В трибе Pionini (Ichneumonidae: Ctenopelmatinae) из Приморского края России описаны новые род и вид – *Petiolon cephalotes* **gen. et sp. nov.** Новый род отличается от других родов трибы необычно длинным, узким, почти прямым и без глимм первым сегментом метасомы, очень широкой головой (в 1.7 раза шире мезоскутума между тегулами) и более толстым яйцекладом с очень тонкой в апикальных 0.25 нижней вальвой, характерной для трибы Pionini.

**Key words:** Primorsky Territory, Russia, taxonomy, ovipositor, Ichneumonidae, Ctenopelmatinae, Pionini, *Petiolon*, new genus, new species

**Ключевые слова:** Приморский край, Россия, систематика, яйцеклад, Ichneumonidae, Ctenopelmatinae, Pionini, *Petiolon*, новый род, новый вид

**ZooBank Article LSID:** urn:lsid:zoobank.org:pub:3B832DF0-01B3-4BB4-A95C-2542599BB8BB

## Introduction

The tribe Pionini comprises 19 genera in the world, of them 14 genera are Holarctic, four are Neotropical (mainly endemics from Chile) and one is Australian (Yu et al., 2016). Twelve genera and 95 species of the tribe are known from Russia (Kasparyan & Khalaim, 2007; Kasparyan, 2019). All species of Pionini, as well as the subfamily Ctenopelmatinae, are koinobiont endoparasitoids of the larvae of sawflies (Hymenoptera: Symphyta).

The tribe Pionini is characterised by a narrow and deep U-shaped groove between the propodeum and metanotum, and a very thin (at least in its apical part) ovipositor lacking a dorsal subapical notch. Such shape of the ovipositor is a remarkable feature of the tribe Pionini, while in most other Ctenopelmatinae the subapical dorsal notch on the ovipositor is present (Townes, 1969, 1970; Cameron et al., 2014). A thin ovipositor apex is related to such biological peculiarity of Pionini as oviposition into small objects, i.e. in eggs or young

tenthredinid larvae. Convergently, a similar ovipositor is seen in some Ctenopelmatini (e.g. *Ctenopelma nigrum* Holmgren, 1857) whose females also attack host eggs. Either attacking host eggs or young larvae, the ctenopelmatine larvae always finish their development in the host cocoon.

The aim of this work is to describe a new enigmatic genus of the tribe Pionini from the Russian Far East characterised by the unusual shape of the ovipositor. The taxonomic position of the new genus is discussed.

## Material and methods

The type material of the new species is deposited in the Zoological Institute of the Russian Academy of Sciences, St Petersburg, Russia (ZIN). Morphological terminology mainly follows that of Townes (1969, 1970). Taxonomy follows the catalogue Taxapad (Yu et al., 2016). Layer photographs were taken in ZIN with a Canon EOS 70D digital camera attached to an Olympus SZX10 stereomicroscope, and partially focused images were assembled with Helicon Focus 6 Pro software.

## Taxonomic part

Order **Hymenoptera**

Family **Ichneumonidae**

Subfamily **Ctenopelmatinae**

Tribe **Pionini**

Genus ***Petiolon*** Kasparyan, **gen. nov.**  
(Figs 1–8)

Type species: *Petiolon cephalotes* Kasparyan, **sp. nov.**

**Comparative remarks.** The genus *Petiolon* is described in the tribe Pionini as it has a distinct tooth at the apical edge of the fore tibia (typical of all Ctenopelmatinae); narrow U-shaped groove between the metanotum and propodeum; a very thin ovipositor apex without a dorsal subapical notch (Fig. 6); open clypeal fovea; distinct notauli; and the cercus twice as long as wide. The enlarged head of *Petiolon* is similar to that in some Perilissini, but its first metasomal tergite is without glymmae (Fig. 4), which are always present in Perilissini.

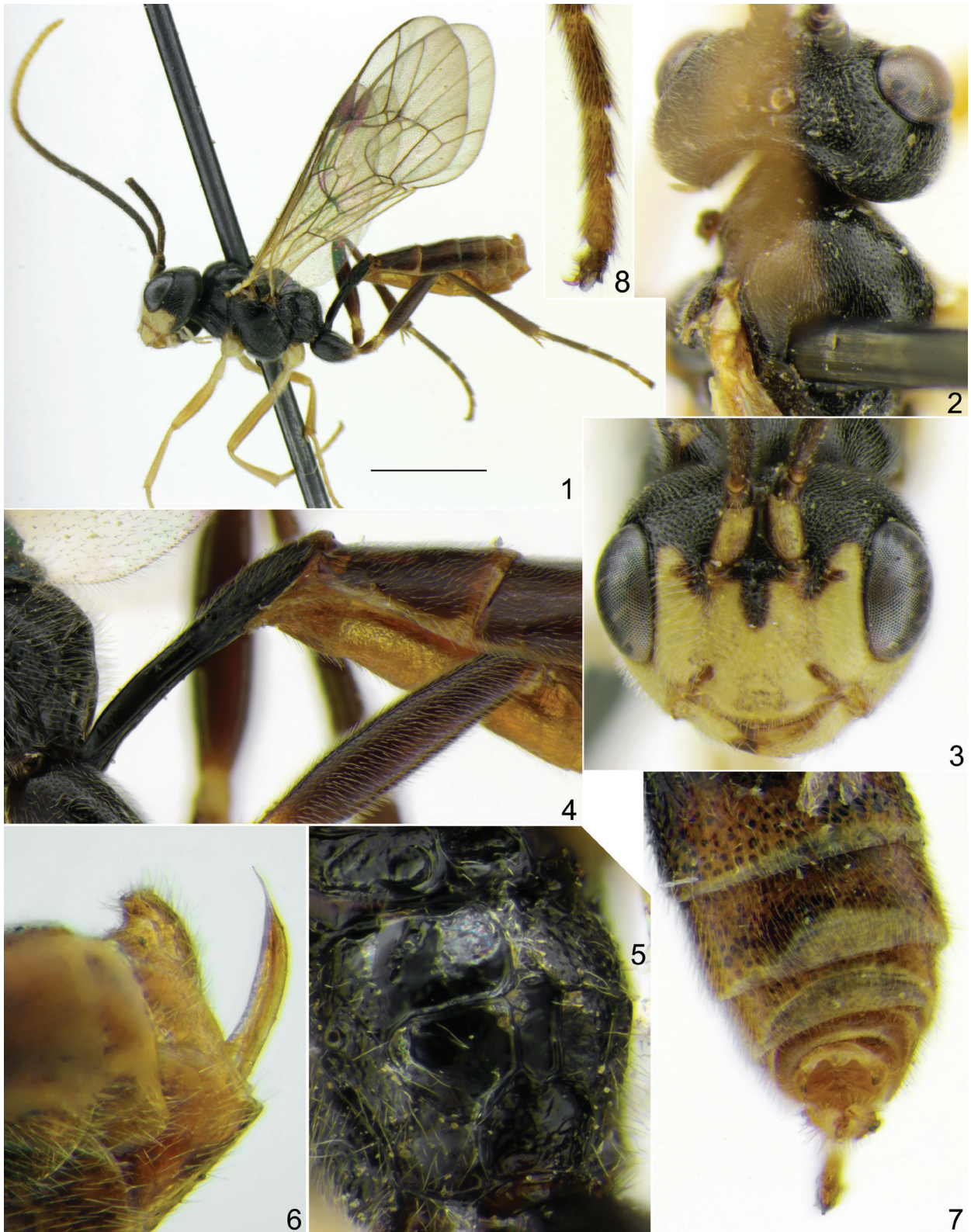
*Petiolon* may be distinguished from other genera of Pionini by its broad ovipositor sheath and thick subcylindric and slightly upcurved ovipositor with the dorsal valve tapering and narrow only at the extreme apex (in apical 0.1) (Fig. 6), and the forewing with the subcostal and basal veins meeting at a very acute angle (Fig. 1). *Petiolon* resembles the endemic Chilean genus *Petilium* Townes, 1970 in having the prepectal carina distant from the anterior edge of the mesopleuron, and a very notable first metasomal segment with a long and straight petiole and spiracles situated just behind the middle of the tergite (Fig. 4). The new genus is also characterised by a notably slender body and large head; the latter is 1.7 times as wide as the mesoscutum, and the distance between the lateral ocellus and eye is at least 3.0 times the maximum diameter of the lateral ocellus (Fig. 2).

**Description.** Head large, 1.7 times as wide as mesoscutum (measured between tegulae). Lateral ocellus separated from eye by about 3.0 times its own maximum diameter (Figs 2, 3). Clypeus almost flat, hardly separated from face by superficial impression, with lower margin weakly arcuate, obtuse, truncated and slightly projecting centrally; anterior edge of truncation rather sharp, and hind edge of truncation straight and sharp. Mandible with equal teeth; its lower margin in basal 0.65 sharp, carinate. Occipital carina joining hypostomal carina very close to base of mandible (oral carina about 0.1 times as long as basal mandibular width).

Head, thorax, hind coxa and hind femur smooth and evenly covered with dense distinct punctures; lower part of clypeus polished, with sparse punctures; mesopleuron with large impunctate speculum; metapleuron with small polished area just before anterior end of pleural carina of propodeum. Propodeum with punctures somewhat smaller and shallow, its posterior areas impunctate.

Epomia vertical and short. Upper end of prepectal carina distant from front edge of mesopleuron. Notaulus short and sharp at anterior vertical part of mesoscutum. Propodeum separated from hind margin of metanotum by a deep and narrow U-shaped groove. Carinae of propodeum complete, costulae present (Fig. 5). Fore wing with basal vein and subcosta joining at very acute angle about 20° (Fig. 1). Areolet present, receiving second recurrent vein close to its outer corner;





**Figs 1–8.** *Petiolon cephalotes* gen. et sp. nov., female, holotype (1, 3, 4, 6, 8) and paratype (2, 5, 7). 1, body, lateral view; 2, head and mesoscutum, dorsal view; 3, head, frontal view; 4, propodeum and base of metasoma, lateral view; 5, propodeum, dorso-lateral view; 6, apical part of metasoma, lateral view; 7, apical part of metasoma, dorsal view; 8, apical part of hind tarsus, lateral view. Scale bar: 2.0 mm.

nervulus vertical and almost opposite basal vein. Hind wing with nervellus inclivous and intercepted at its lower 0.2. Apical edge of front tibia dorsally with a distinct tooth. Membranous flap on inner side of front tibial spur ending distally in a gradual taper. Longest spur of hind tibia straight, about 0.3 times as long as hind basitarsus. Tarsal claws with two or three sparse teeth in middle part and three or four close teeth at base (Fig. 8).

First segment of metasoma without glymmae, narrow, 3.3 times as long as broad, with spiracle slightly behind its middle (in apical 0.45) (Fig. 4); its median and dorsolateral longitudinal carinae absent; petiole almost straight in lateral view, flat dorsally and laterally, rectangular in cross-section (about 1.2 times as high as wide) near its middle. Second tergite basolaterally with distinct thyridium (Fig. 4). Tergites smooth, first tergite with moderately small and irregular punctures, and subsequent tergites with punctures very small and dense. Epipleurae of tergites two and three separated by crease and turned under. Hind margin of tergite six dorsally with a broad median membranous emargination (Fig. 7). Ovipositor sheath 0.55 times as long as apical depth of metasoma, rather wide, upcurved, with apical fringe of setae. Ovipositor thick, subcylindrical, without subapical dorsal notch, slightly upcurved, with upper valve thin and wedge-shaped in apical 0.1; lower valves very thin in apical 0.25 and projecting beyond apex of upper valve (Fig. 6). Cerci about twice as long as wide.

**Etymology.** The generic name is derived from the Latin *petiolus* (petiole), referring to the very slender petiole of the first metasomal segment. The gender is masculine.

**Composition.** The genus comprises a single species which is described below.

***Petiolon cephalotes* Kasparyan, sp. nov.**  
(Figs 1–8)

**Holotype.** Female, **Russia**, *Primorsky Terr.*, 20 km SW of Putsilovka, Monakino, forest, meadows, 24–28.VI.1993, coll. S.A. Belokobylsky (ZIN).

**Paratype.** **Russia**, *Primorsky Terr.*, Krasnoarmey-sky Distr., Mel'nichnoe, 22–30.VI.2001, coll. A.G. Kirejtshuk, 1 female (ZIN).

**Description.** *Female* (holotype). Fore wing 6.0 mm long. Antenna with 27 flagellomeres; first

flagellomere about 1.2 times as long as second flagellomere. Antenna blackish with scape ventrally and apical half of flagellum (flagellomeres 14–27) completely light yellow (Fig. 1). Head and mesosoma black; face yellow except for short median black stripe above (Fig. 3); lower 0.3 of frontal orbit, clypeus, malar space and lower 0.2 of temple (Fig. 1), mouth parts except for brownish mandibular teeth, small spot on hind corner of pronotum, tegula, basal plates of fore wing, fore and mid coxae, trochanters and all trochantelli whitish yellow. Fore and mid legs light yellow. Hind leg with coxa and femur blackish (apical edge of coxa and extreme base of femur light yellow), tibia and tarsus brown, tarsomeres pale at extreme bases. First metasomal tergite black with hind margin brownish; tergites 2–4 blackish brown with posterior part reddish brown correspondingly at 0.15, 0.25 and 0.4 of their length; subsequent tergites, ovipositor sheath and all sternites yellowish brown. Hind margins of tergites 4 (or 5) to 6 dorsally with distinct broad yellowish membranous emargination (Fig. 7).

**Male.** Unknown.

**Etymology.** The species name derives from the Latin "*cephalotus*" referring to the large head.

## Discussion

The cylindrical and thick ovipositor of *Petiolon* is unusual for the Pionini, but its thin extreme apex and dorsal valve lacking subapical notch indicate that this genus belongs to this tribe. A broad ovipositor sheath is also not typical for most Pionini, but present in some species of *Rhorus* Förster, 1869, the largest genus of the Pionini. *Petiolon* also differs from other genera of Pionini by its enlarged head and thyridia which are typical for some taxa of another ctenopelmatine tribe – Perilissini, e.g. genera *Lathrolestes* Förster, 1869, *Perilissus* Förster, 1865 and *Priopoda* Holmgren, 1865, but the new genus may easily be distinguished from Perilissini by a deep U-shaped groove between the propodeum and metanotum, lack of glymmae (always present in Perilissini), and lack of the dorsal subapical notch on the ovipositor (usually present in Perilissini except several species of *Lathrolestes*; see Cameron et al., 2014).

*Petiolon* differs from other Ctenopelmatinae by two autapomorphies – its unusual ovipositor



(Fig. 6) and a very acute angle between subcostal and basal veins in the fore wing. Both these features are also rarely occur in other ichneumonid subfamilies. Surprisingly, in the shape of the ovipositor, habitus and colour pattern, *Petiolon* resembles very much the monotypic genus *Anoplectes* Kriechbaumer, 1896 in the subfamily Tryphoninae (tribe Eclitini). However, a distinct tooth at the apex of the fore tibia and a weak axillary tongue beyond the base of the fore wing in *Petiolon* indicate that it is a member of the Ctenopelmatinae.

The fore wing with subcostal and basal veins joining at a very acute angle (about 20°) in *Petiolon* occurs rarely within the family Ichneumonidae, but is usual in several genera of Metopiinae (Townes, 1971: Figs 89, 96, 100, etc.), including the aberrant genus *Ischyrocnemis* Holmgren, 1858, which is sometimes also placed in the Pionini (Aubert, 2000; Yu et al., 2016). Recent molecular analysis showed that the taxonomic position of *Ischyrocnemis* within the family Ichneumonidae remains uncertain (Quicke et al., 2009). I suppose that the taxonomy of the enigmatic genus *Petiolon* similarly requires further investigation.

## Acknowledgements

I am cordially grateful to Yulia Astafurova and Andrey Khalaim (ZIN) for their help in the preparation of photographs, and to Gavin R. Broad, Andrei Humala and Andrey Khalaim for their valuable notes on the manuscript. The work was supported by the Russian Foundation for Basic Research (grant No. 19-04-00027) and performed in the framework of the Russian State Research Project No. AAAA-A19-119020690101-6.

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Received 5 June 2020 / Accepted 25 November 2020. Editorial responsibility: A.I. Khalaim